Total Knee Replacements

Historical Information: End-stage osteoarthritis (Degenerative Joint Disease) makes it very difficult for patients to perform simple activities of daily living such as walking or climbing stairs. You may even feel pain while sitting or lying down.

If medications, losing weight, changing your activity level, and/or using a cane or walker are no longer helpful, then total knee replacement may be indicated. By resurfacing your knee's damaged and worn surfaces, total knee replacement can relieve your pain, correct leg deformities and help you resume your normal activities.

One of the most important orthopaedic surgical advances of this century, knee replacement was first performed in 1968. Improvements in surgical materials and techniques since then have greatly increased its effectiveness. There are more than 140,000 knee replacements performed each year in the United States. Whether you have just begun exploring treatment options or have already decided with your orthopaedic surgeon to have total knee replacement surgery, this booklet will help you understand more about this procedure.

How the Normal Knee Works: The knee is the largest joint in the body. Nearly normal knee function is needed to perform routine everyday activities. The knee is made up of the lower end of the thigh bone (femur), which rotates on the upper end of the shin bone (tibia) and the knee cap (patella), which slides in a grove on the end of the femur. Large ligaments attach to the femur and tibia to provide stability. The long thigh muscles give the knee strength.

The joint surfaces where these three bones touch are covered with articular cartilage, a smooth substance that cushions the bones and enables them to move easily. All remaining surfaces of the knee are covered by a thin, smooth tissue liner called the synovial membrane. This membrane releases a special fluid that lubricates the knee which reduces friction to nearly zero in a healthy knee.
Normally, all of these components work together, however disease or injury can disrupt this harmony, resulting in pain, muscle weakness and decreased function.

Common Causes of Knee Pain and Loss of Knee Function: The most common cause of chronic knee pain and disability is "*Arthritis*". Osteoarthritis, rheumatoid arthritis and traumatic arthritis are the most common forms of arthritis.

"*Osteoarthritis"* usually occurs after the age of 50 and often in an individual with a family history of arthritis. The cartilage that cushions the bones of the knee softens and wears away. The bones then rub against one another causing knee pain and stiffness.

"*Rheumatoid Arthritis*" is a systemic disease process that affects multiple joints, where the synovial membrane becomes thickened and inflamed, producing too much synovial fluid which over-fills the joint space. This chronic inflammation can damage the cartilage and eventually cause cartilage loss, pain and stiffness.

"*Traumatic Arthritis*" can follow a serious knee injury. A knee fracture or severe tears of major ligaments may also damage the articular cartilage over time, causing knee pain and limiting knee function.

Is Total Knee Replacement for YOU? The decision whether to have this surgery should be a cooperative one between you, your family, your family physician, and your orthopaedic surgeon. Common reasons to consider having a total knee replacement include:

Severe knee pain that limits your everyday activities, including walking, going up and down stairs, and getting in and out of chairs. You may find it hard to walk more than a few blocks without

significant pain and you may need a walker or cane.
Moderate or severe knee pain while resting either day or night.
Chronic knee inflammation and swelling that doesn't improve with rest or medications.
Knee deformity either bowing in or out
Knee stiffness, inability to bend or fully straighten your knee
Failure to obtain pain relief from non-steroidal anti-inflammatory drugs, physical therapy, knee joint injections, etc.
Inability to tolerate or complications from pain medications

Most patients who undergo total knee replacement are between the ages of 60-80, but orthopaedic surgeons evaluate patients individually. Recommendations for surgery are based on a patient's pain and disability, not age.

The Orthopaedic Evaluation: The orthopaedic evaluation consists of several components. These results will be reviewed with you along with a discussion whether total knee replacement would be best for you.

~ Medical history in which your orthopaedic surgeon gathers information about not only your extremity complaints but your general health as well.
~ Physical Examination to assess your knee motion, stability, strength and overall leg alignment.
~ Radiographs (X-rays) to determine the extent of damage and deformity in your knee
Occasionally blood tests, MRI (Magnetic Resonance Imaging), and or a bone scan may be needed to determine the condition of the bone and soft tissues of your knee.
~ Your orthopaedic surgeon will also explain the potential risks and complications of total knee replacement, including those related to the surgery itself and those that can occur over time after your surgery.

Realistic Expectations About Knee Replacement Surgery: An important factor in deciding whether to have total knee replacement surgery is understanding what the procedure can and cannot do. More than 90% of individuals who undergo total knee replacement experience a dramatic reduction of knee pain and a significant improvement in the ability to perform activities of daily living. But total knee replacement won't make you a super athlete or allow you to do more than you could before you developed arthritis. Following surgery, you will be advised to avoid some types of activity for the rest of your life, including jogging and high impact sports.

Dangerous Activity After Surgery

Jogging or Running

Contact Sports Jumping Sports

High Impact Aerobics

Activity Exceeding Usual Recommendations After Surgery

Vigorous walking or hiking

Skiing Tennis

Repetitive lifting exceeding 50 pounds

Repetitive aerobic stair climbing

Expected Activity After Surgery

Recreational Walking or Swimming

Golf Driving Light Hiking

Biking Ballroom Dancing

Normal Stair Climbing

With normal use and activity, every knee replacement develops some wear in its plastic cushion. Excessive activity or weight may accelerate this normal wear and cause the knee replacement to loosen and become painful. With appropriate activity modification, knee replacements can last for many years.

Preparing for Knee Replacement Surgery: If you decide to have a knee replacement you may be asked to have a complete physical by your family physician to assess your health and to rule-out any conditions that could interfere with your surgery.

Tests such as blood work, cardiogram and a urinalysis may be necessary as part of your preoperative evaluation.

Your knee and leg should be free of any skin infections or irritation. Your lower leg should not have any chronic swelling. Contact your orthopaedic surgeon prior to surgery if either is present for a program to best prepare your skin for surgery.

Blood Donation is usually not necessary though occasionally you may lose enough blood to need some blood replaced. If you need blood after your surgery, several options are available.
* *Donor Blood* from the American Red Cross is very safe and if needed a small amount of your blood will be obtained and a match from a donor will be made.
* *Directed Blood Donation* is blood donated by someone you know. The chosen person is someone who has the same blood type as yours. This blood is saved just for you and will go to you only if you need it. The process of directed blood donation takes three to four days to process.

**Autologous Blood Donation* is one you donate yourself. Prior to your scheduled surgery, your own blood would be obtained from you and saved for only you. The amount of blood you give will depend on your doctor. This is the safest possible blood you can receive because it is your own. Autologous donations are usually scheduled weekly and must be started 4-6 weeks prior to surgery.

Medications names and/or dosing instructions should be made available. Your orthopaedic

surgeon will advise you as to which medications should be stopped and which you could continue to take prior to surgery. As a general rule, your routine medications will be reinitiated immediately following surgery. A list of medication allergies and other sensitivities needs to be provided.

*Anti-inflammatory medications need to be discontinued unless advised otherwise by your doctor.

*If you are under a cardiologist care, check with him before discontinuing aspirin or coumadin.

Dental evaluations should be considered before your total knee replacement as treatment of significant dental diseases (including tooth extractions or periodontal work) may be indicated.

Urinary evaluations preoperatively should be considered for individuals with a history of recent or frequent urinary infections. For older men with prostate disease, required treatment should be considered prior to knee replacement surgery.

Additional surgical planning includes the need to:

*Sign your operation permit

*Pre-admission testing and anesthesia consultation

Social Planning: Though you will be able to walk on crutches or a walker soon after surgery, you will need help for several weeks with such tasks as cooking, shopping, bathing and doing laundry. If you live alone, your surgeons's office and social services worker will help you make advanced arrangements to have someone assist you at home. They can also help arrange for a short stay in an extended care facility (rehabilitation center) during your recovery, if this option works best for you.

Home Planning: Several suggestions can make your home easier to navigate during your recovery. Consider:

Safety bars or a secure handrail in your shower or bath.

Secure handrails along your stairway

A stable chair for your early recovery with a firm seat cushion (height 18-20 inches), a firm back, two arms and a footstool for intermittent leg elevation

An elevated toilet seat with arms

A stable shower bench or chair

Removing all loose carpets and cords

A temporary living space on the same floor, because walking up or down stairs will be more difficult during your early recovery.

Your Surgery: You will be admitted to the hospital on the day of your surgery. After admission, you will be evaluated by a member of the anesthesia team. The most common types of anesthesia are general anesthesia, in which you are asleep throughout the procedure and spinal or epidural anesthesia, in which you are awake but your legs are numb. You and the anesthesia team will determine which type of anesthesia will be best for you.

The procedure itself takes about two hours. Your orthopaedic surgeon will remove the damaged cartilage and bone and then position the new metal and plastic joint surfaces to restore the alignment and function of your knee.

Many different types of designs and materials are currently used in total knee replacement surgery.

Nearly all of them consist of three components: the *femoral component* (made of a highly polished strong metal), the *tibial component*, (made of a durable plastic often held in a metal tray), and the *patella component*, (also plastic).

After surgery, you will be moved to the recovery room where you will remain for one-two hours while your recovery from anesthesia is monitored. After you awaken, you will be taken to your hospital room, at which time your family members may join you.

Your Hospital Stay: You will stay in the hospital for several days (Average 3-5 days). The night before surgery DO NOT eat or drink anything after midnight. It is essential that you shower or bathe scrubbing your knee from hip to toe for approximately 10 minutes. Personal items to bring to the hospital include:

Clothing to include pajamas should be easy to put on and take off. Robes should have closures of buttons or snaps or zippers and need to open completely in front. Do not bring a robe that you need to step into or pull over your head.

Footwear such as slippers should have non-skid rubber bottoms and need to have backs on them.

Toilet articles i.e. toothbrush, toothpaste, deodorant, comb brush and shampoo will need to be brought with you.

Miscellaneous items such as books, stationary are recommended. Please leave all valuables at home, such as credit cards, large amounts of money and jewelry.

After surgery, you will feel some discomfort, but pain medication will be given to you to make you feel as comfortable as possible. Walking and knee movement are important to your recovery and will begin soon after surgery. (This early rehabilitation is helpful in preventing blood clot formation in your legs and helps to prevent other potential postoperative complications such as pneumonia.)

To avoid lung congestion after surgery, you will be encouraged to breathe and cough deeply and will be provided with "blow bottles" which you should use every hour while awake.

Additional prophylactic measures undertaken following surgery to prevent blood clot formation and to reduce leg swelling include: application of support hose, inflatable leg coverings (compression boots), and administration of blood thinners.

To facilitate knee and leg motion, your surgeon will use a *continuous passive motion* (CPM) unit, that slowly moves your knee while you are in bed. This device decreases leg swelling by elevating your leg and improves your blood flow by moving the muscles in the leg.

Foot and ankle motion are also encouraged immediately following surgery to aid in improving leg blood flow and to help prevent blood clots from forming. Knee, foot and ankle exercises are begun the day after surgery.

A physical therapist will teach you specific exercises to strengthen your leg and restore knee movement to allow walking and other normal daily activities soon after surgery. You will be encouraged to stand at the bedside and walk using either crutches or walker early in your postoperative course. (Most often on the first postoperative day).

Possible Complications After Surgery: The complication rate following total knee replacement surgery is low. Serious complications, such as a knee joint infection, occur in less than two percent of patients. Major medical complications, such as heart attack or stroke occur even less frequently. Chronic illnesses may increase the potential for complications. Although uncommon, when these complications occur they can prolong or limit your full recovery.

Infection is not expected following surgery but it can occur. Post surgical swelling and bruising is not uncommon.

** **W**arning signs of a possible knee replacement infection are:

Persistent fever (Greater than 101 degrees)

A low grade fever following surgery is not uncommon and should be treated with liquids by mouth, cough and deep breathing and/or use of "blow bottles".

Shaking chills

Increasing redness, tenderness or swelling of the knee incision

Drainage from the incision

Increasing knee pain with both activity and rest

** **Notify** your doctor immediately if you develop any of these signs.

Blood clots in the leg veins are the most common complication of knee replacement surgery. Your orthopaedic surgeon will outline and institute an extensive prevention program, which includes those things that have been previously discussed.

** **W**arning signs of possible blood clots in your leg include:
Increasing pain in your calf
Tenderness or redness above or below your knee
Increasing swelling in your calf, ankle, and foot
** **W**arning signs that a blood clot has traveled to your lung include:
Sudden increased shortness of breath
Sudden onset of chest pain
Localized chest pain with coughing

** **Notify** your doctor immediately if you develop any of these signs.

Avoiding Fall: A fall during the first few weeks after surgery can damage your new knee and may result in a need for further surgery. Stairs are a particular hazard until your knee is strong and mobile. You should use a cane, crutches, a walker, handrails, or someone to help you until you have improved your balance, flexibility and strength.

Discharge Planning: Prior to hospital discharge a social worker will be available to help your discharge go smoothly. Discharge from the hospital is usually 3-5 days after surgery as long as no medical complications have occurred. This social worker will help you look at available support systems and your physical needs to determine a personalized plan of care at discharge. The following needs to be considered as part of discharge planning.

Level of functioning: How well are you getting around? Can you do most activities of daily living on your own? These activities include bathing, dressing and meal preparation.

Support Systems: Do you have people that can provide help for you? Is there someone who can be with you in the home most of the time for at least one week? If your spouse works, he/she may need to take vacation time. Friends can assist with light housekeeping, shopping, driving and meal preparation. Are people physically able to assist you?

Physical layout of home: Are there stairs in your home? Is your apartment accessible by elevator? Are passages wide enough to maneuver your walker, especially in the bathroom area? Are chairs, beds and toilets to low? Throw rugs are a hazard and should not be left down.

Equipment needs: At home you may need special equipment such as: a walker, crutches, raised toilet seat, bedside commode or shower chair. These items are the most commonly needed.

If you do not have these items the social worker can help make arrangements to obtain them prior to discharge.

After looking at your personal support systems and your physical needs, a personalized plan of care can be developed to assist with determining your placement after you leave the hospital.

Discharge Options Include:

Home with equipment and visits from a physical therapist or
temporary placement in a subacute rehabilitative care facility for daily therapy or rehab hospital placement.

I. Going Home – Some people go straight home. As part of your home care plan you will most likely have physical therapy at home three times per week. Insurance should cover this. If you are a Medicare patient, you are also entitled to an aide two or three times per week to help with personal care such as bathing and dressing. The social worker can also help you get any

equipment you need before going home.

II. Subacute Rehab Centers – You may need to go to a subacute rehab center until you are able to go home. There are a number of excellent subacute rehab centers in the area. The usual stay in this setting is two weeks or so. You will have therapy for one to two hours daily. Medicare and most insurance companies pay all or most of these costs. If you feel this is the best plan you may want to call us ahead of time to get a list of facilities that you can visit before surgery. This gives you control over where you will go rather than having to rely on family and friends to make the decision for you.

Your Recovery At Home: The success of your surgery also will depend on how well you follow your orthopaedic surgeon's instructions at home during the first few weeks after surgery.

Wound Care: You will have stitches or staples running along your incision or a suture beneath your skin on the front of your knee. The stitches or staples will be removed after about fourteen days post surgery. A suture beneath your skin will not require removal as it would be absorbable.

* Avoid soaking the wound in water until the wound has thoroughly healed. A bandage may be placed over the wound to prevent irritation from clothing or support stockings.
* Once the incision has healed Vitamin E Cream or Cocoa butter is useful in softening the incision and making it less noticeable.

Diet: Some loss of appetite is common for several weeks after surgery. A balanced diet, often with an iron supplement, is important to promote proper tissue healing and restore muscle strength. A diet high in fiber (extra fruits and vegetables) is encouraged as it will help to prevent constipation which is not uncommon following surgery (due to the use of narcotic pain medications and inactivity).

Activity: Exercise is a critical component of home care, particularly during the first few weeks after surgery. You should be able to resume most normal activities of daily living within three to six weeks following surgery. Some discomfort with activity and at night is common for several weeks after surgery. Specific instructions regarding activity post surgery will be provided by your surgeon however, a general activity program should include:

* A graduated walking program to slowly increase your mobility, initially around your home and later outside
* Resuming other normal house hold activities, such as sitting and standing and walking up and down stairs.
* Specific exercises several times a day to restore movement and strengthen your knee. You proba bly will be able to perform the exercises without help, but you may have a physical therapist help you at home or in a therapy center the first few weeks after surgery.

Driving: Usually begins when your knee bends sufficiently so you can enter and sit comfortably in your car and when your muscle control provides adequate reaction time for braking and acceleration. Most individuals resume driving about four to six weeks after surgery.

REMEMBER that you should be off all prescription pain medications and should have the ability to operate a motor vehicle safely even during emergency situations.

Pain Medication: Pain medication prescriptions will be provided by your physician. Follow the instructions explicitly and REMEMBER most pain medications can cause drowsiness and operation of motor vehicles or operating moving machinery may be hazardous. Again, please remember that Non-Steroidal Anti-Inflammatory (NSAID) medication needs to be discontinued 7-10 days prior to surgery. (This includes aspirin or aspirin products).

How Your New Knee Is Different: You may feel some numbness in the skin around your incision. You may also feel some stiffness, particularly with excessive bending activities such as when you get in and out of a car or a low chair. Kneeling is usually uncomfortable, but it is not harmful. Occasionally, you may feel some soft clicking of the metal and plastic with knee bending or walking. These differences are common though often diminish with time and most patients find these are minor, compared to the pain and limited function they experienced prior to surgery. Your new knee may activate metal detectors required for security in airports and some buildings. Tell the security agent about your knee replacement if the alarm is activated.

After surgery, make sure you do the following:

A physical therapist will visit you twice per day beginning the day after surgery. These times are set aside for you to walk and to provide you with instructions as to your scheduled activities and to allow you time for questions that you and your family may have.

Participate in regular light exercise programs to maintain strength and mobility of your new knee. Ice your knee for 20 minutes after each period of exercise.

The post operative brace provided to you in the hospital needs to be worn when ambulating unless otherwise advised. The use of pillows under the knee is discouraged as they promote contractures of the hamstring muscles. These rules are usually followed for up to six to eight weeks following surgery.

Take special precautions to avoid falls and injuries. Individuals who have undergone total knee replacement surgery and suffer a fracture may require more surgery.

* Notify your dentist that you had a knee replacement. You should be given antibiotics before all dental procedures for the rest of your life.

* See your orthopaedic surgeon periodically for routine follow-up examination and radiographs annually.